

## **REMARKS**

Upon entry of this Amendment, Claims 1, 4, 7, 11 and 14 are amended and Claims 1-20 remain pending in this application. Reexamination and reconsideration of the application as amended are requested.

### **Claim Rejections – 35 U.S.C. §102**

**The Examiner rejects Claims 1 and 3 as being anticipated by Sainio (U.S. Patent No. 5,689,425). Applicants disagree.**

Claim 1 has been amended to include the limitation hardware based binary correlator. Sainio does not teach the use of a hardware-based binary correlator of an image processing system. Accordingly, withdrawal of this rejection is requested.

Claim 3 depends from Claim 1 and is therefore allowable for the reasons discussed above with respect to Claim 1, as well as for other reasons not discussed herein.

### **Claim Rejections – 35 U.S.C. §103**

**The Examiner rejects Claim 2 as being unpatentable over Sainio in view of Katayama (U.S. Patent No. 5,917,556). Applicants disagree.**

As discussed above with respect to Claim 1, Sainio is lacking any teaching of a hardware based binary correlator and as acknowledged by the Examiner is lacking the use of a FPGA. Katayama does not cure these deficiencies.

The Examiner cites col. 4, lines 12-26 in Katayama for the teaching of a color registration control system wherein the binary correlator is implemented on a FPGA. This cited portion of Katayama does not refer to a hardware based binary correlator, only to a FPGA.

As amended, Applicants' Claim 1 requires the image processing system to process the image to determine any color register error of the printing press. Katayama is devoid of any teachings as to determine color register error of a printing press.

Amended Claim 1 requires the hardware based binary correlator be adapted to find register marks on the paper substrate. Katayama is devoid of any teachings as to use of a binary correlator to find register marks, much less a binary correlator implemented on a FPGA.

Further, there is no motivation to combine Sainio and Katayama. Sainio performs correlation using software. There is no motivation or suggestion in Sainio to image process other than in software. The Examiner states that one would look to Katayama for "an efficient way to process the image of color". Applicants respectfully disagree and do not believe that wanting to efficient process images provides any motivation in Sainio to switch to a hardware based approach to image processing of register marks. Katayama further includes no teaching of a paper substrate, a printing press, or use of a hardware based binary correlator to locate register marks on the paper substrate. One skilled in the art would not look to Katayama to modify Sainio in that Katayama is geared toward correcting a color video signal for white balance.

Accordingly, Applicants request the allowance of Claim 2.

**The Examiner rejects Claims 4 and 5 as being unpatentable over Sainio in view of Zhang et al. (U.S. Patent No. 6,295,115).** Applicants disagree.

Sainio is deficient as a reference as outlined above with respect to Claim 1.

Turning to Zhang and amended Claim 4, Zhang does not teach the use of a hardware based histogrammer as required by Applicants' Claim 4.

There is also no motivation to combine Sainio and Zhang. The Examiner posits that it would have been obvious to modify Sainio to have a histogrammer as taught by Zhang because it is very efficient in calculating the levels of illumination. Zhang teaches method for producing an optimized color image from a photographic negative image and its corresponding photographic print image. The process is a replacement for image retouching of photographic prints. See col. 4, lines 62-67. One skilled in the art of color registration methods on a printing press would not look to color optimization of photographic negative and prints for ways to efficient calculate illumination levels.

Further, the Examiner has provided no motivation for the use of a histogram in Sainio to calculate illumination levels in the first place.

Accordingly, Applicants request the allowance of Claims 4 and 5.

**The Examiner rejects Claim 6 as being unpatentable over Sainio in view of Zhang and further in view of Katayama.** Applicants disagree.

For the reasons set forth above with respect to Claim 4, the Sainio and Zhang references do not teach or suggest the claim limitations of Claim 4 to which Claim 6 depends. Katayama does not cure these deficiencies. The general teaching in Katayama of the use of a FPGA provides no motivation to implement the required histogrammer of Applicants' Claim 6 on such an FPGA. The underlying Sainio and Zhang references also provide no such motivation. It is Applicants' view that the Examiner's stated motivation of the use of an FPGA for "efficient processing" does not meet the standard as required for a prima facie case of obviousness.

**The Examiner rejects Claims 7, 8, 9 and 11 as being unpatentable over Sainio in view of Zhang.** Applicants disagree.

With respect to Claim 7, Zhang is deficient as a reference because it does not teach a hardware based histogrammer as required by Claim 7.

As discussed above, there is no motivation to combine Sainio and Zhang due to the different fields of endeavor and due to the lacking of any reason to use such a histogrammer in Sainio. It is Applicants' view that the Examiner's stated motivation of the combination of Sainio and Zhang of "efficient calculation of illumination levels" does not meet the standard as required for a prima facie case of obviousness.

Accordingly, allowance of Claim 7 is requested.

With respect to Claims 8 and 9, these claims depend from Claim 7 and are therefore allowable for the reasons discussed above with respect to Claim 7, as well as for other reasons not discussed herein.

With respect to Applicants' amended Claim 11, Sainio does not teach a hardware based binary correlator. Zhang does not cure the deficiency. Accordingly, allowance of Claim 11 is requested.

**The Examiner rejects Claims 10, 12 and 13 as being unpatentable over Sainio in view of Zhang and further in view of Katayama.** Applicants disagree.

With respect to all of these claims each requiring an FPGA, the Sainio, Zhang and Katayama are deficient as set forth above and further there is no motivation to combine the reference as set forth above. Accordingly, allowance of Claims 10, 12 and 13 is solicited.

**The Examiner rejects Claims 14, 15 and 18-20 as being unpatentable over Sainio in view of Katayama.** Applicants disagree.

With respect to Claim 14, Sainio is deficient as a reference in that it does not disclose the use of a hardware-based correlator adapted to locate register marks on a paper substrate and implemented on a FPGA. Katayama does not cure these deficiencies. Katayama does not disclose a hardware-based correlator adapted to locate register marks on a paper substrate and implemented on a FPGA.

Further, and as set forth above, there is a lack of motivation to combine these two references.

Claims 15, 18, and 19 depend from Claim 14 are therefore also allowable for the reasons set forth with respect to Claim 14 and for other reasons not set forth herein.

With respect to Claim 20, Claim 20 requires, inter alia, an image processing subsystem implemented on at least one FPGA, and wherein when it is desirable to change the image processing subsystem, said at least one FPGA is suitably re-programmed. Neither the Sainio, Katayama nor Zhang reference disclose or teach such a re-programmable FPGA. Accordingly, Claim 20 is allowable.

**The Examiner rejects Claims 16 and 17 as being unpatentable over Sainio in view of Katayama and further in view of Zhang.** Applicants disagree.

Claims 16 and 17 depend from Claim 14 are therefore allowable for the reasons set forth with respect to Claim 14 and for other reasons not set forth herein.

Further, Claims 16 and 17 contain subject matter which as argued previously above, is not disclosed nor made obvious by the combination of the Sainio, Katayama and Zhang references.

### **CONCLUSION**

In view of the foregoing, entry of the above amendments and allowance of Claims 1-20 are respectfully requested.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Billie Jean Smith', written over a horizontal line.

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